

PHENIX VTX DB: Update

Peter Steinberg
April 5, 2006

Thanks to Matt & Kieran

Strategy

- **PHENIX VTX DB (PVD) purchased in late 2004**
 - Dual 3.2 GHz CPU rack-mounted Dell server
 - 500GB Disk, 2GB Memory
 - Similar machine handled 5 years of PHOBOS
- **Comprehensive Functionality**
 - Sensor inventory, bench tests, detector geometry, calibrations
 - Web server, VTX TWiki
- **Proven technologies**
 - Apache/PHP - standard web server & scripting language
 - Postgres/SQL - standard PHENIX DB (+ ROOT access)
 - Labview SQL interface

PVD.chm

PVD Graph I-V Form:

Resources:

- [TWiki](#)

Bench Tests:

- [Graph I-V](#)
- [Graph C-V](#)
- [I-V Data entries](#)
- [C-V Data entries](#)
- [Dump I-V](#)
- [Dump C-V](#)

Vendors:

- [Add new vendor](#)
- [List vendors](#)

Locations:

- [Add new location](#)
- [List locations](#)

Batches:

- [Add new batch](#)
- [List batches](#)

Wafers:

- [Add new wafer](#)
- [List wafers](#)

Sensors:

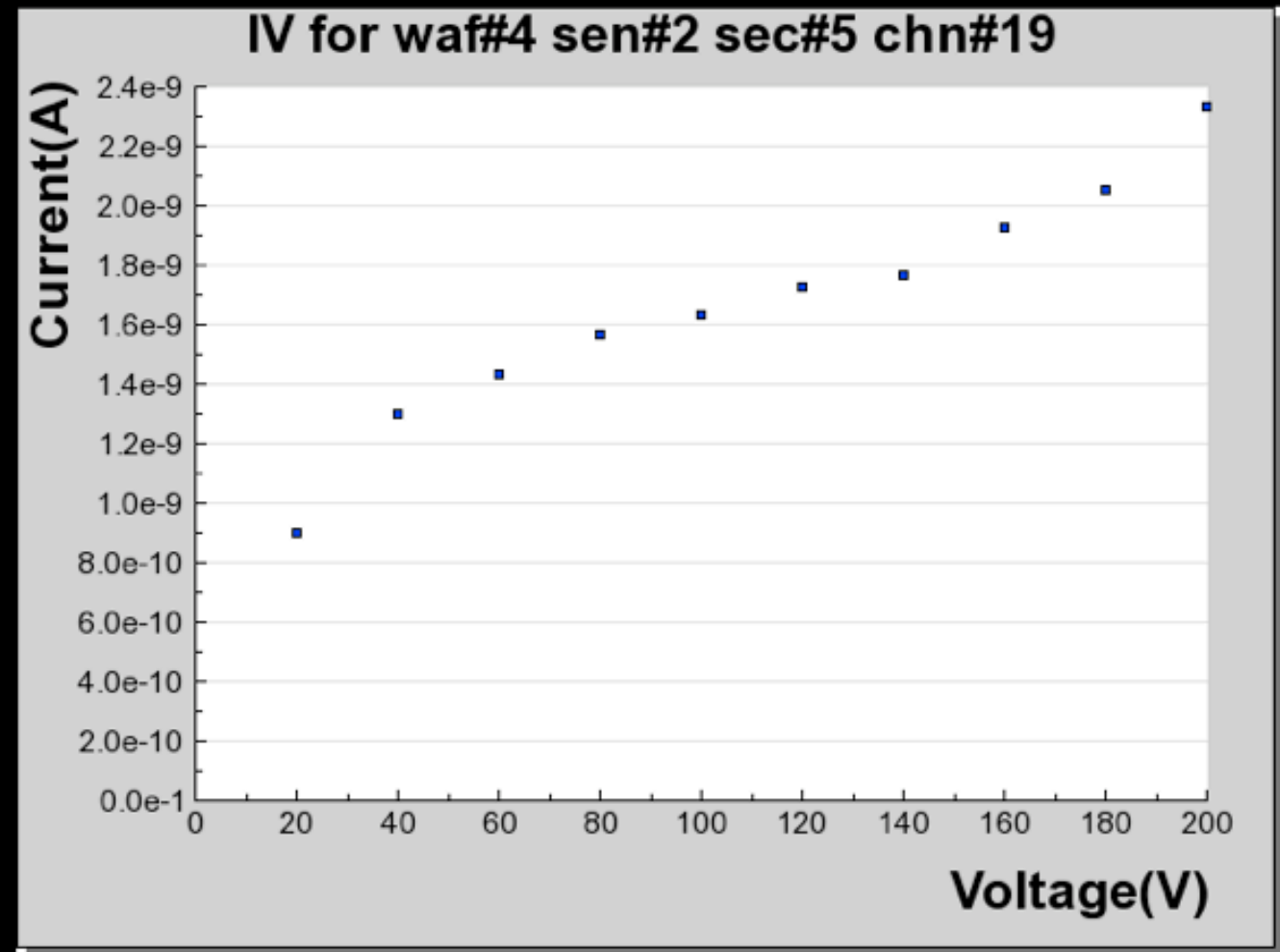
- [Add new sensor](#)
- [List sensors](#)

Tests:

- [Addresses](#)

Set 'wafer' appropriately and hit "submit" to set other menus appropriately.

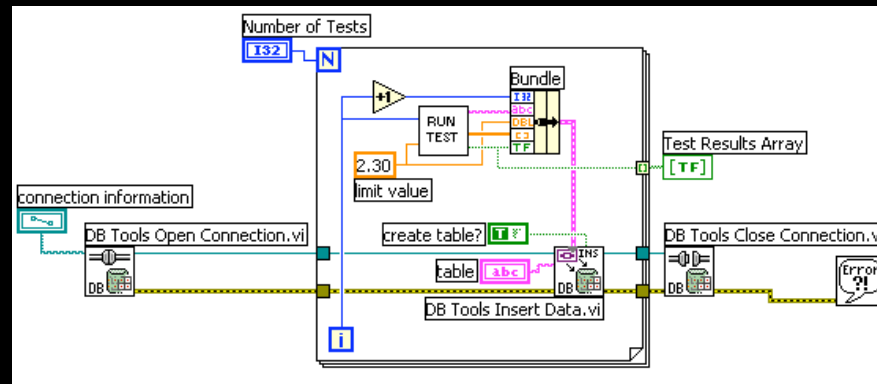
Wafer: Sensor: Sector: Channel:



<http://pvd.chm.bnl.gov>

Accessing PVD

- **PVD: For PHENIX VTX eyes only**
 - Login: bnlttest/phnxvtx
 - Web interface will offer full access
 - But always under construction!
- **PVD machine used to upload text files to DB (via ROOT interface)**
- **Silicon test Labview uploads via SQL interface**



Example from LabVIEW manual

Recent Work

- **Start on inventory system**
 - PAS: Partial implementation
- **Storage of CV&IV measurements**
 - PAS: Uploading of text files
 - MAN: Direct access from SUNY/BNL Labview
- **Access to CV&IV information**
 - PAS: Numbers & graphs

Inventory Data Structure

Vendor Keep track of multiple sources

Batch Sets of produced wafers

Wafer Sets of wafers within a batch

Sensor Sensors cut from a wafer

Sector 12 Sectors within each sensor

These are the “coordinates” for every Si-related object.
Alternative is a “name”, like HB02W3S1...

IV Measurement Table

```
[postgres@pvd ~/sql]$ more create-iv-table.sql
drop table iv;
create table iv
(
  vendor_id      integer not null,
  batch_id       integer not null,
  wafer_id       integer not null,
  sensor_id      integer not null,
  sector_id      integer not null,
  channel_id     integer not null,
  current        real      not null,
  voltage        real      not null,
  creation_date  timestamp  not null,
  validity_date  timestamp  not null,
  constraint iv_pkey primary key
    (validity_date,creation_date,vendor_id,batch_id,wafer_id,sens
    or_id,sector_id,channel_id,voltage)
);
grant all on iv to apache;
grant select on iv to steinber;
grant insert on iv to steinber;
grant select on iv to manguyen;
grant insert on iv to manguyen;
grant select on iv to bnlttest;
grant insert on iv to bnlttest;
[postgres@pvd ~/sql]$
```

PVD.chm

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PVD Add vendor form:

2006-04-04 07:40:28

Name:

Code:

Comments:

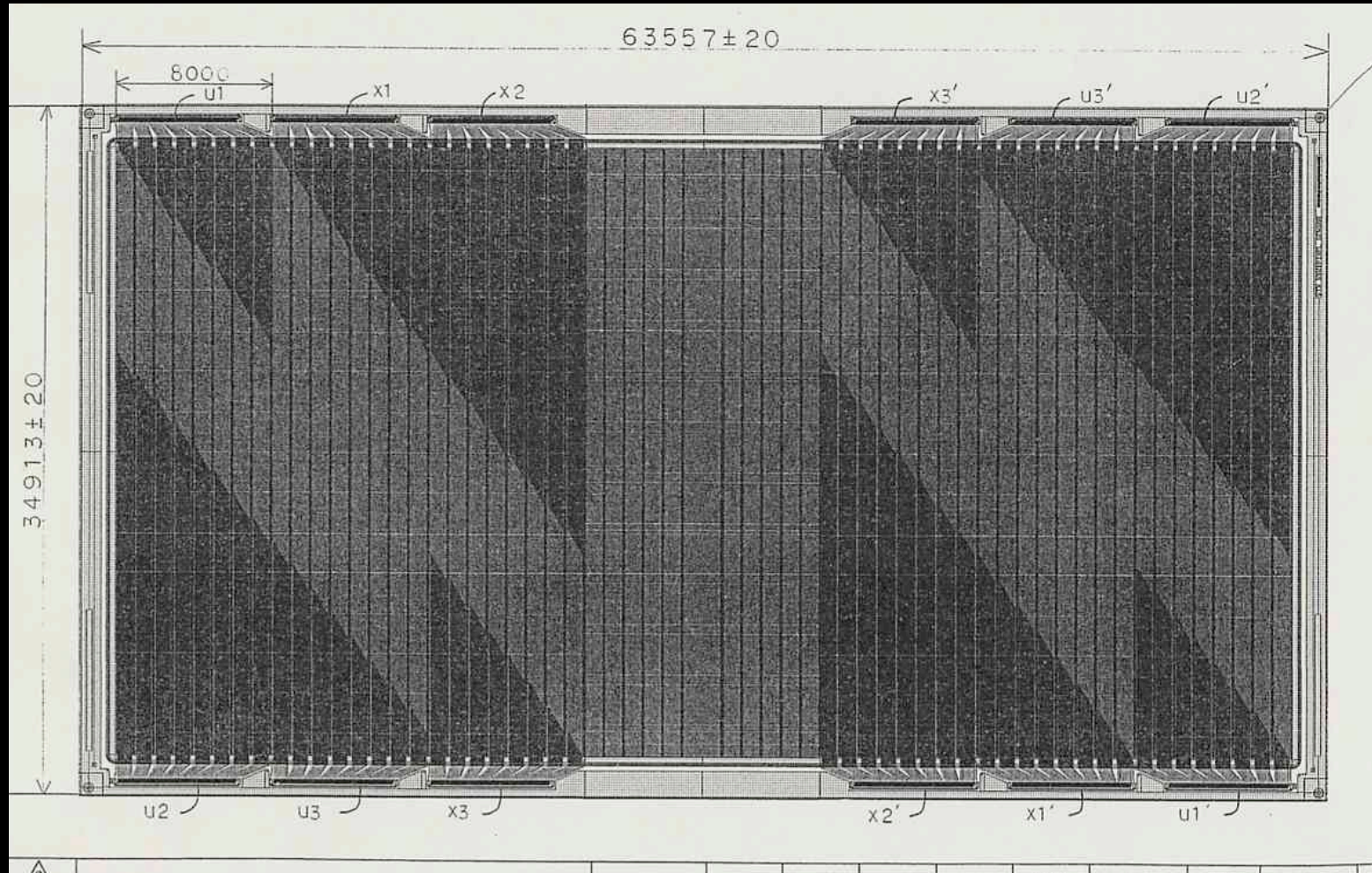
Default comment

Add Vendor

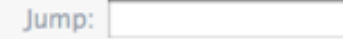
Pages exist to enter
Vendors, Locations, Batches, Wafers, Sensors

Tables will reject information about
non-existent objects (i.e. sensors with
invalid wafer, batch, or vendor ID) via
“foreign keys” (TBD)

Sector \leftrightarrow Integer Map



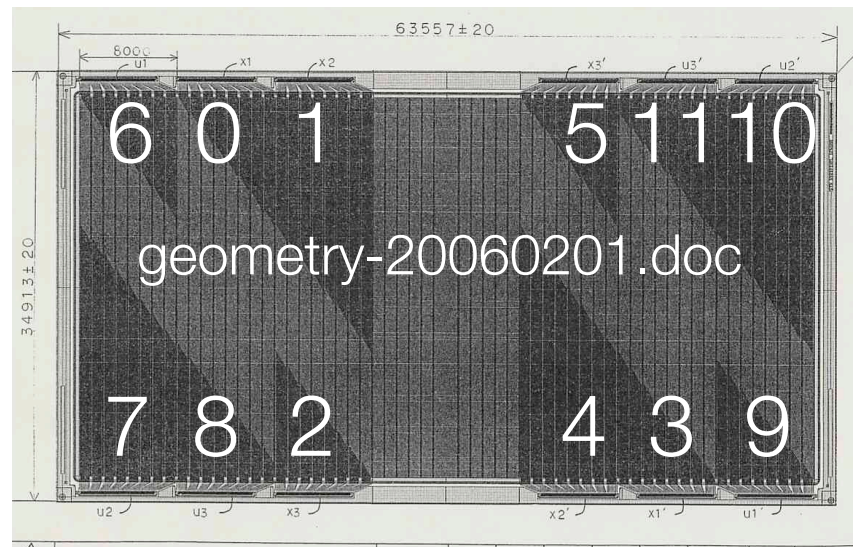
Would like to avoid putting U1L, X2R, etc in DB



PeterSteinbergq2 topic end

Create personal sidebar

Sector	Integer
X1L	0
X2L	1
X3L	2
X1R	3
X2R	4
X3R	5
U1L	6
U2L	7
U3L	8
U1R	9
U2R	10
U3R	11



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PVD.chm

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Sensors:

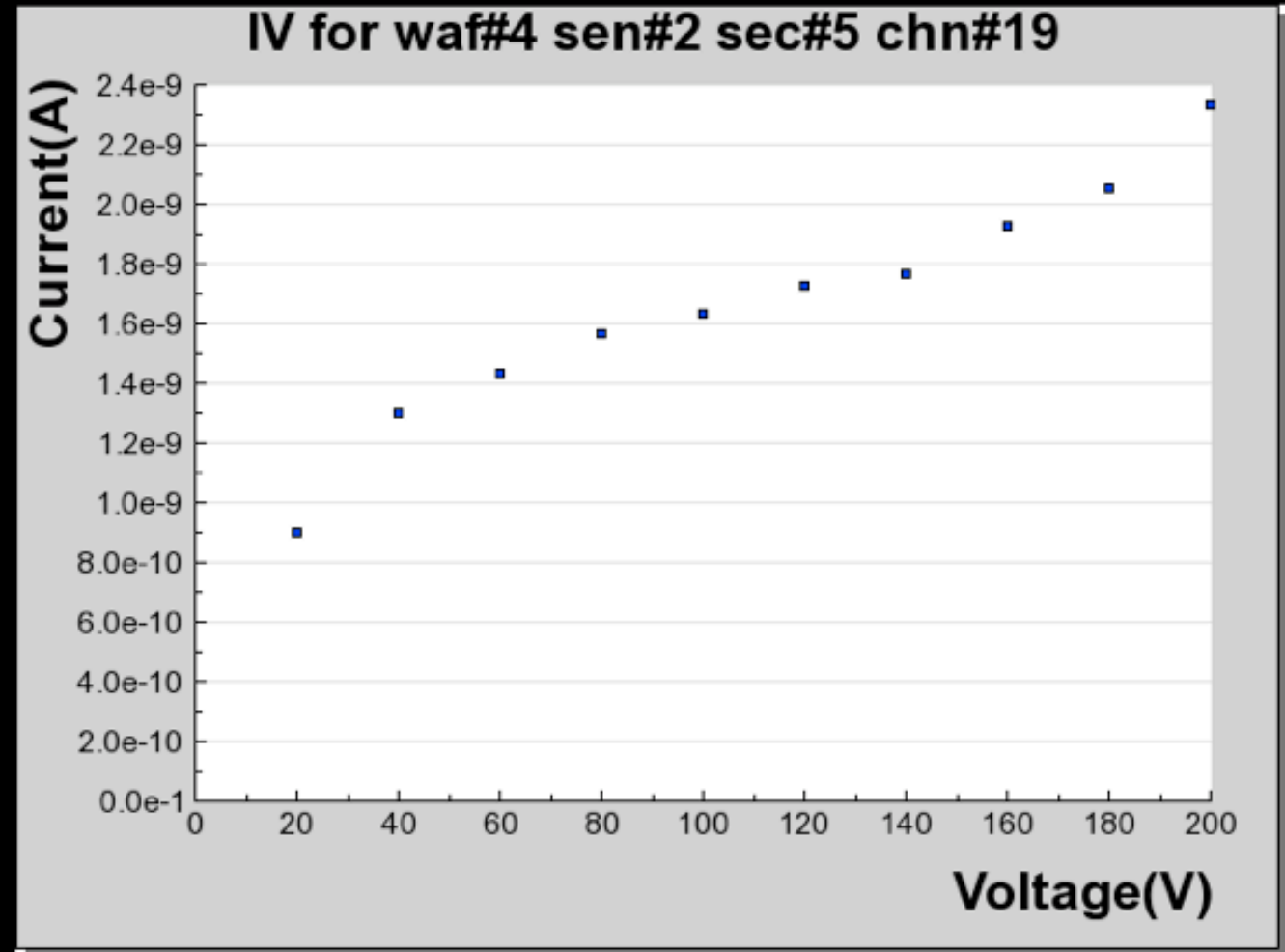
- [Add new sensor](#)
- [List sensors](#)

Tests:

- [Addresses](#)

Set 'wafer' appropriately and hit "submit" to set other menus appropriately.

Wafer: Sensor: Sector: Channel:



This page demonstrates all of the relevant technologies!
Labview connections, Apache/PHP, Postgres/SQL, jpGraph

http://pvd.chm.bnl.gov/

panasonic lx1

News Feeds (384) IG Apple PSP PHOBOS ATLAS PHENIX RCF EB Blogs arXiv Services RHIC/AGS

PVD.chm

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Tests:

- ["Addresses"](#)

2006-03-30 20:05:00	2006-03-30 20:05:00	10	3	1
2006-03-30 20:05:29	2006-03-30 20:05:29	10	3	1
2006-03-30 20:05:56	2006-03-30 20:05:56	10	3	1
2006-03-30 20:06:24	2006-03-30 20:06:24	10	3	1
2006-03-30 20:06:52	2006-03-30 20:06:52	10	3	1
2006-03-30 20:07:05	2006-03-30 20:07:05	10	3	1
2006-03-30 20:40:06	2006-03-30 20:40:06	14	1	3
2006-03-30 20:40:18	2006-03-30 20:40:18	14	1	3
2006-03-30 20:42:32	2006-03-30 20:42:32	14	1	3
2006-03-30 20:42:54	2006-03-30 20:42:54	14	1	3
2006-03-30 20:43:02	2006-03-30 20:43:02	14	1	3
2006-03-30 20:45:59	2006-03-30 20:45:59	14	1	3
2006-03-30 20:47:02	2006-03-30 20:47:02	14	1	3
2006-03-30 20:49:23	2006-03-30 20:49:23	99	1	3
2006-03-30 21:08:45	2006-03-30 21:08:45	78	2	5
2006-03-31 12:06:52	2006-03-31 12:06:52	10	3	0
2006-03-31 12:26:17	2006-03-31 12:26:17	10	3	3
2006-03-31 12:56:47	2006-03-31 12:56:47	10	3	3
2006-03-31 15:45:20	2006-03-31 15:45:20	10	3	3
2006-03-31 16:19:57	2006-03-31 16:19:57	10	3	4
2006-03-31 16:50:30	2006-03-31 16:50:30	10	3	4
2006-03-31 16:50:31	2006-03-31 16:50:31	10	3	4
2006-04-03 12:08:26	2006-04-03 12:08:26	10	3	4
2006-04-03 14:26:51	2006-04-03 14:26:51	10	3	11
2006-04-03 14:58:45	2006-04-03 14:58:45	10	3	8

Back to PVD

Spy on the SB students!

Bottom Line

- **All basic systems are operational**

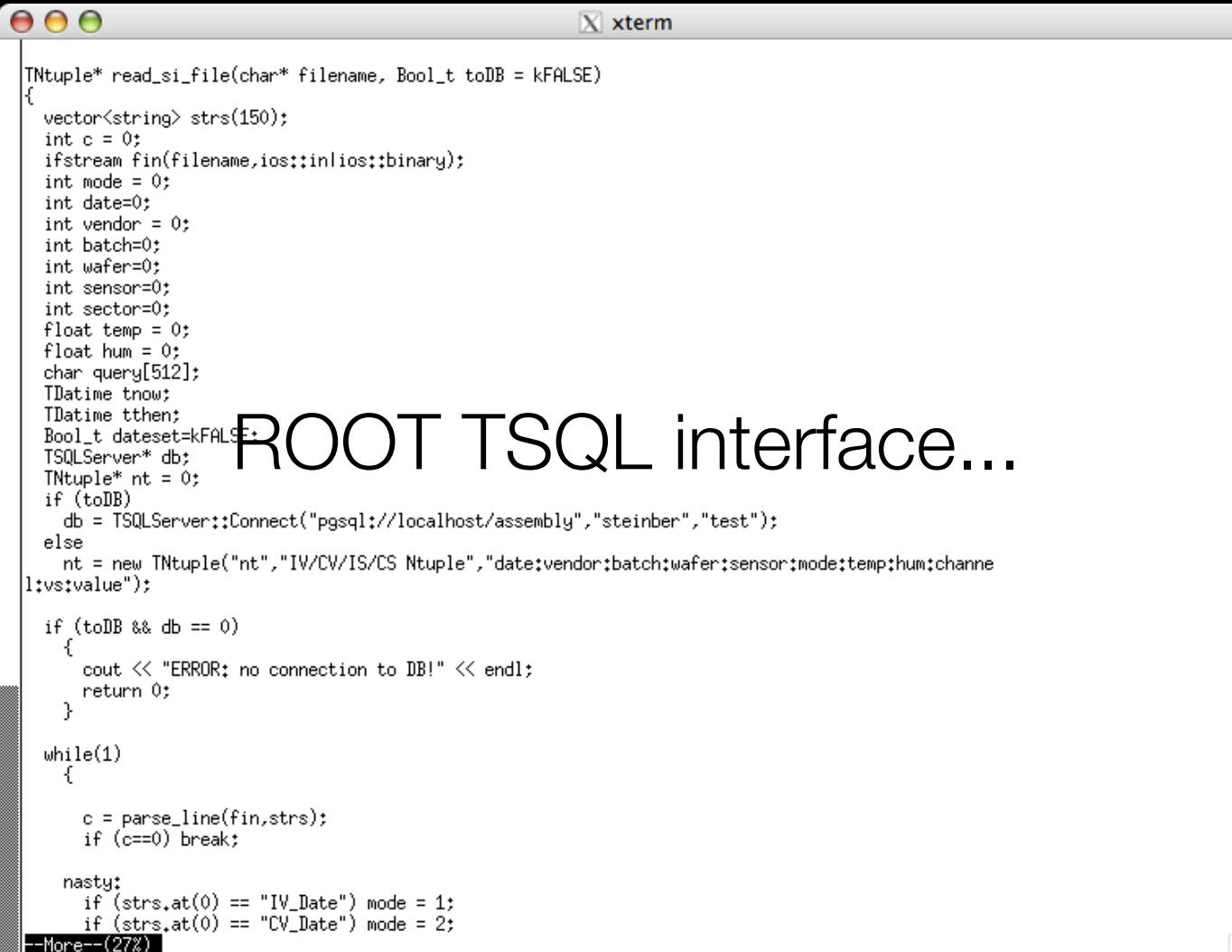
- Labview to PVD (Postgres)
- Access to PVD via PHP webpages
- Numbers and graphs

- **Design is still under development**

- Need features and data structures that will be robust against changes in sensors, test procedures, etc.
- Expect to wipe and restore DB many times in near future

- **In several months should be able to use DB as “permanent” store**

Uploading Text Files



```
TNtuple* read_si_file(char* filename, Bool_t toDB = kFALSE)
{
    vector<string> strs(150);
    int c = 0;
    ifstream fin(filename, ios::in|ios::binary);
    int mode = 0;
    int date=0;
    int vendor = 0;
    int batch=0;
    int wafer=0;
    int sensor=0;
    int sector=0;
    float temp = 0;
    float hum = 0;
    char query[512];
    TDateTime tnow;
    TDateTime tthen;
    Bool_t dataset=kFALSE;
    TSQLServer* db;
    TNtuple* nt = 0;
    if (toDB)
        db = TSQLServer::Connect("pgsql://localhost/assembly", "steinber", "test");
    else
        nt = new TNtuple("nt", "IV/CV/IS/CS Ntuple", "date:vendor:batch:wafer:sensor:mode:temp:hum:channe
l:vs:value");

    if (toDB && db == 0)
    {
        cout << "ERROR: no connection to DB!" << endl;
        return 0;
    }

    while(1)
    {
        c = parse_line(fin, strs);
        if (c==0) break;

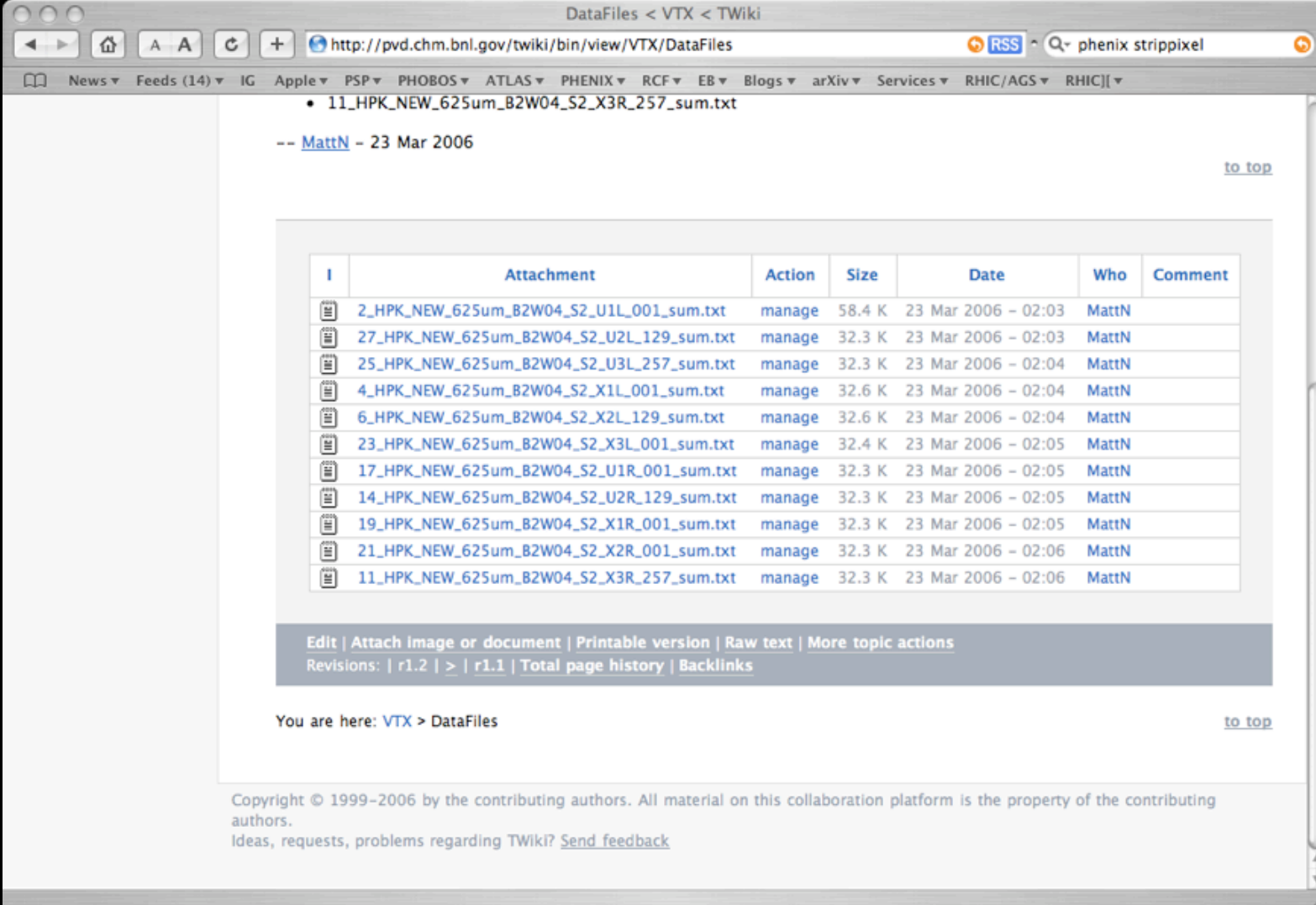
        nasty:
        if (strs.at(0) == "IV_Date") mode = 1;
        if (strs.at(0) == "CV_Date") mode = 2;
    }
}
```

ROOT TSQL interface...

--More--(27%)

We must always store as text files for now.
Can easily upload all data (~minutes/file)

Data Files on TWiki



The screenshot shows a web browser window displaying a TWiki page titled "DataFiles < VTX < TWiki". The address bar shows the URL "http://pvd.chm.bnl.gov/twiki/bin/view/VTX/DataFiles". The page content includes a list of attachments, a table with columns for ID, Attachment, Action, Size, Date, Who, and Comment, and a footer with copyright information.

• 11_HPK_NEW_625um_B2W04_S2_X3R_257_sum.txt

-- [MattN](#) - 23 Mar 2006

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I	Attachment	Action	Size	Date	Who	Comment
	2_HPK_NEW_625um_B2W04_S2_U1L_001_sum.txt	manage	58.4 K	23 Mar 2006 - 02:03	MattN	
	27_HPK_NEW_625um_B2W04_S2_U2L_129_sum.txt	manage	32.3 K	23 Mar 2006 - 02:03	MattN	
	25_HPK_NEW_625um_B2W04_S2_U3L_257_sum.txt	manage	32.3 K	23 Mar 2006 - 02:04	MattN	
	4_HPK_NEW_625um_B2W04_S2_X1L_001_sum.txt	manage	32.6 K	23 Mar 2006 - 02:04	MattN	
	6_HPK_NEW_625um_B2W04_S2_X2L_129_sum.txt	manage	32.6 K	23 Mar 2006 - 02:04	MattN	
	23_HPK_NEW_625um_B2W04_S2_X3L_001_sum.txt	manage	32.4 K	23 Mar 2006 - 02:05	MattN	
	17_HPK_NEW_625um_B2W04_S2_U1R_001_sum.txt	manage	32.3 K	23 Mar 2006 - 02:05	MattN	
	14_HPK_NEW_625um_B2W04_S2_U2R_129_sum.txt	manage	32.3 K	23 Mar 2006 - 02:05	MattN	
	19_HPK_NEW_625um_B2W04_S2_X1R_001_sum.txt	manage	32.3 K	23 Mar 2006 - 02:05	MattN	
	21_HPK_NEW_625um_B2W04_S2_X2R_001_sum.txt	manage	32.3 K	23 Mar 2006 - 02:06	MattN	
	11_HPK_NEW_625um_B2W04_S2_X3R_257_sum.txt	manage	32.3 K	23 Mar 2006 - 02:06	MattN	

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500 sensors x 32kB x 12 ~ 200 MB. Not much data...

Next Steps

- **Inventory system**

- Track each batch, wafer, sensor
- Location, status
- Actions performed: shipping, testing

- **Collaborate with NCC**

- Similar needs for inventory
- Unfortunately, different working modes, DB access expected

- **Connect with more institutions**

- Matt N is now a Labview-to-Postgres expert
- Can we get UNM storing directly to DB?

- **Need more peoplepower!**

- Design, implementation, webpages, etc.